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ABSTRACT

A proposed three-dimensional model for identifying the gifted conceives of giftedness as a combination of characteristics. It emphasizes the different qualities of the characteristics as well as the fact that such characteristics exist in degrees or levels, thus helping to avoid thinking of giftedness or its components as being either wholly present or wholly absent in any individual. The model, visualized as a cube, incorporates the three characteristics that are important to achieve a high level of performance: (1) "aptitudes" comprising the vertical dimension; (2) "specific knowledge and skills" the horizontal dimension; and (3) "affective characteristics" the front-to-back dimension. Traits on any of the three dimensions are assumed to be distributed somewhat normally throughout the population, therefore creating a cluster comprising the majority of people in the center of the cube. People with extremely high or low "scores" would be found at the extremes, especially the corners of the cube. The four top corners would contain the identifiably gifted. The combinations of high characteristics represented by each corner present varying challenges for program planning. The model acknowledges that gifted students may be deficient in some areas but includes them and addresses their deficiencies. (VW)

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A THREE-DIMENSIONAL MODEL FOR INDIVIDUALIZING INSTRUCTION FOR GIFTED STUDENTS

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Gifted and Talented Children

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A THREE-DIMENSIONAL MODEL FOR INDIVIDUALIZING INSTRUCTION FOR GIFTED STUDENTS

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The purpose of this paper is to stimulate discussion which may help us rethink our definitions of giftedness and the ways in which we program for the gifted. The paper grew out of a sense that the complexities of giftedness are often ignored in identification procedures and programming efforts that are based on idiosyncratic views of giftedness, on mechanistic procedures, and on fragmented efforts to promote the development of giftedness.

A model is being proposed to respond to several concerns about ways in which gifted students are often identified. For example:

1. Some identification procedures treat students' characteristics as though individual students either possess certain traits or do not. There is little recognition of the fact that most human characteristics exist in degree and are more or less normally distributed in the population. The need to select students for a program has exacerbated this tendency; a student is either "gifted" or "not gifted."

2. Some identification procedures treat students' characteristics as though they were static, unchanging traits. This contradicts what we know about human development. It also contradicts what we are trying to do in education, that is, help

people change some of their characteristics in order to improve performance.

3. Some identification procedures are essentially one dimensional, relying primarily on a single measure of students' characteristics.

4. Some identification procedures which do use different measures of students' characteristics do not always use different kinds of measures. It is not unusual for an identification process to include a measure of intelligence, a composite score from an achievement test, and teachers' recommendations, all of which may tend to emphasize general ability to the exclusion of specific abilities and other characteristics.

5. Some identification procedures which use different kinds of measures do so haphazardly, with the result that there is no assurance that a full description of students is obtained. We have depended on what might be called "data overkill" to make sure that we have enough varied data to describe students. We need not just more data but more varied data. By approaching the problem systematically, we may be able to obtain more complete descriptions of students.

6. Some identification procedures are technically good but are not appropriate for the programs for which students are being identified.

7. Some identification procedures combine data from different sources in ways that obscure what the different kinds of data might show about the uniqueness of individual gifted students.

8. Some identification procedures do not produce information that is useful in designing programs or in adapting instruction to respond to the needs of individual students.

The model being proposed is also intended to respond to several concerns about ways in which we program for gifted students. For example:

1. Some programs for gifted students seem to assume that all of the students in the program are alike. Although few educators of the gifted would agree to such an assumption, the lack of variety of objectives and activities in some programs results in essentially the same treatment for each student.

2. In programs which distinguish between broad needs of students (for example, the needs of students who are gifted mathematically versus the needs of those who are gifted linguistically), the characteristics and needs of individual students within each group may be overlooked. All of the mathematically gifted students may be treated alike and all of the linguistically gifted students may be treated alike.

Three Types of Characteristics

The proposed model incorporates three types of characteristics that are important to achieve a high (i. e., gifted) level of performance. They are:

1. Aptitudes--defined as enduring capacities that are relatively unaffected by specific learning experiences.

2. Specific knowledge and skills--abilities that constitute the tools necessary for a specific kind of functioning.

3. Affective characteristics--the attitudes, feelings, values, predipositions, and similar traits which determine how a person functions in a particular area.

The level of a person's performance in a particular endeavor depends on his or her aptitude for that activity, on the knowledge and skills that are relevant to that kind of endeavor, and on affective characteristics that shape the ways in which the other characteristics will be applied to the endeavor.

The specific aptitudes, knowledge and skills, and affective characteristics that are important to a particular kind of performance are not defined at this point. However, some assumptions are made about the nature of the types of characteristics. For all three types of characteristics, it is assumed that:

1. The specific aptitudes, knowledge and skills,and affect that are important to any kind of endeavor exist in people throughout the population.

2. They exist in different people to different degrees or at different levels.

3. These different degrees or levels are distributed within the population in a fashion somewhat resembling the normal distribution, the familiar bell-shaped curve.

Assessing the Three Types of Characteristics

For most kinds of performance, it is likely that each dimension might be assessed by several measures. There is probably no single measure that represents a dimension

completely, although our inadequacies of measurement or the simple need for economy may cause us to represent a dimension with a single measure. For purposes of discussion here, it will be assumed initially that each dimension might be represented by a single measure.

It is also assumed that the various characteristics making up the three dimensions can be measured. Of the three dimensions, knowledge and skills can probably be most easily measured in straightforward fashion. The subtests on standardized achievement tests are intended to do this in various subject areas.

Measuring aptitudes presents a more difficult problem, since our measures tend to confound aptitude and specific kinds of learning. For example, intelligence tests usually include vocabulary or some other aspect of language development, which we would classify as knowledge and skills. And affective characteristics, such as motivation, also influence measures of aptitude.

Assessing affect presents additional problems because, at least in some instances, we are trying to measure inner states that often can only be inferred from behavior. For that reason, we use self reports, observations, symbolic behavior, projective techniques, or other devices to attempt to get an indirect assessment of those inner states.

Whether measuring characteristics "objectively" or "subjectively," our goal is to differentiate between levels or strengths of characteristics possessed by different people. We

will have to use our ingenuity at times to develop the means of assessing, or at least estimating, the extent to which some of the less tangible traits exist in the students we are assessing.

Placing the Characteristics in Three Dimensions

In order to accommodate the interactive nature and the distribution of the three types of characteristics, a three-dimensional model is proposed. It can be visualized as a cube, with Aptitudes making up the vertical dimension, Specific Knowledge and Skills the horizontal dimension, and Affective Characteristics the front-to-back dimension. (See Figure 1.)

Insert Figure 1 about here

As stated above, traits on any of the three dimensions are assumed to be distributed somewhat normally. Thus, people can "score" anywhere from the bottom to the top of the cube to show differences in Aptitude; anywhere from left to right to show differences in mastery of Knowledge and Skills; and anywhere from front to back to show differences in Affective Characteristics. If the assumption about a normal distribution is correct, the majority of people would be found clustered around the middle on each dimension; taking all three dimensions into account simultaneously, this would place them in a cluster near the center of the cube and becoming less closely clustered as they recede from the center. People with extremely high or low "scores" would be found at the extremes, especially the corners

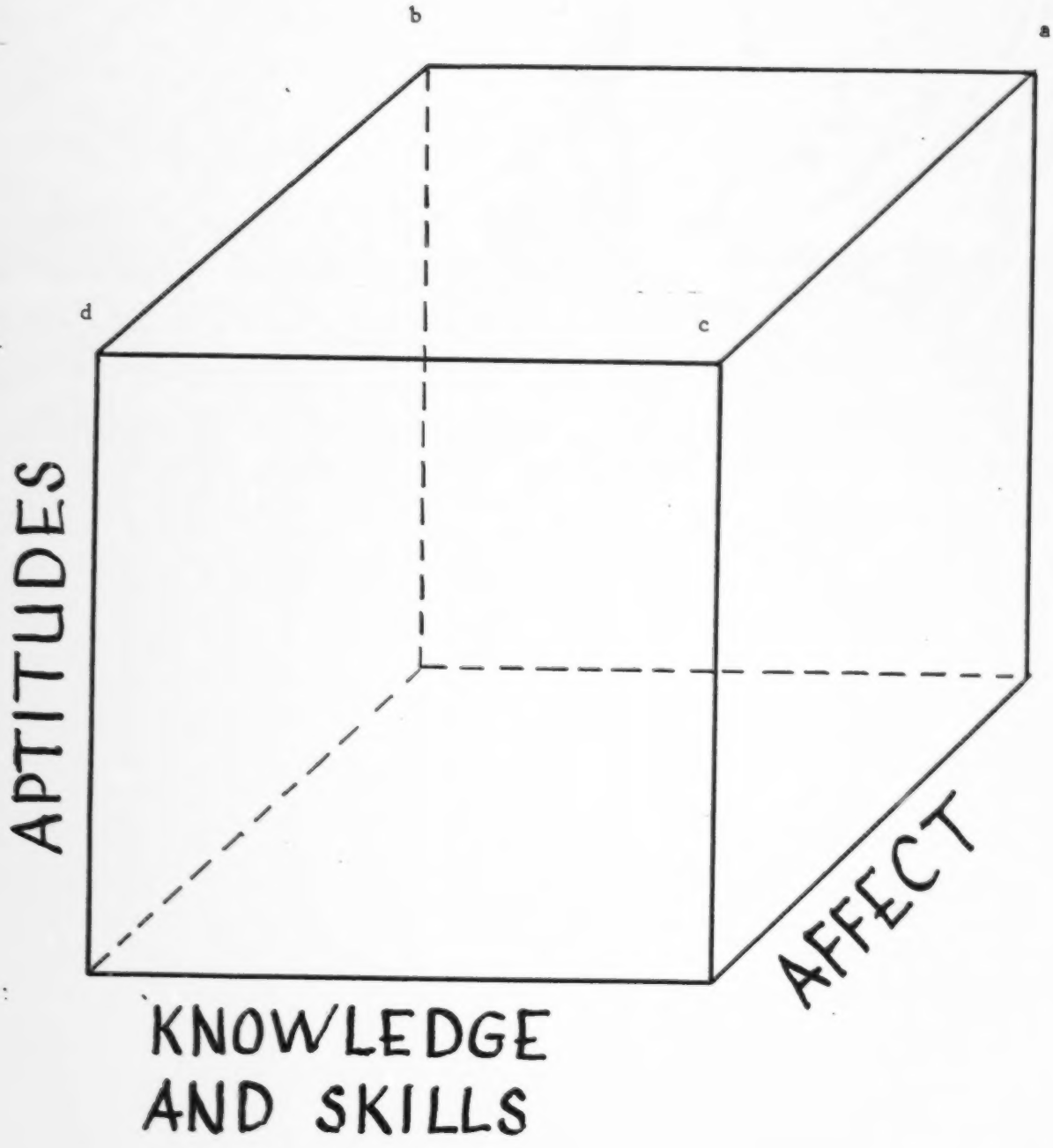

Figure 1. The Three-Dimensional Model

of the cube, so it is at the corners that we can start looking for people that might be described as "gifted."

Possible Combinations of Characteristics

Extremely high levels of functioning on each dimension are represented by one face of the cube: high Aptitude, by the top face; high levels of Knowledge and Skills, by the right-hand face; and high levels of Affective Characteristics, by the back face. The corners of the cube represent the intersection of extreme levels on each of the three dimensions.

The top back right corner (indicated by a in Figure 1) represents high levels of functioning on all three dimensions. The top back left corner (b) represents high levels on Aptitude and Affect, but not on Knowledge and Skills. The top front right corner (c) represents high levels on Aptitude and Knowledge and Skills, but not on Affect. The top left front corner (d) represents a high level on Aptitude, but not on Knowledge and Skills or Affect.

(These are just the extremes, of course. As we look at the corners for illustrative purposes, let's not forget that students fall all along the edges as well as within the cube.)

There are four other possible combinations of extremes, the four bottom corners of the cube, which include a low level of Aptitude and a mixture of lows and highs on the other two dimensions. These are not dealt with here because our understanding of the nature of giftedness seems to preclude an extremely low level of Aptitude in the potentially gifted. On

the other hand, perhaps judgment should be reserved on this, since it is not absolutely certain that aptitudes cannot be changed, even though Aptitude was defined earlier as being an enduring trait.

Implications for Program Planning

What does each corner mean in terms of students' characteristics? Let's take the first corner, (a). A student falling in this corner is high on all three dimensions--Aptitude, Knowledge and Skills, and Affect. That's the kid every teacher wants! A program for this student would be designed to allow him or her to explore the extent of his/her potential. It would most likely be a program which gives the student a great deal of responsibility for determining his/her own learning objectives, procedures, and products.

What about student b, who is high on Aptitude and Affect but low on Knowledge and Skills? This student has high potential which may only be partially realized because he/she is lacking in the necessary tools. His/her program would have to emphasize, at least initially, the development of appropriate tools in order for the student to be able to work at a level commensurate with his/her Aptitude. Student b may be overlooked in programs for the gifted; he/she may not be selected for a program that places heavy emphasis on knowledge and skills in the identification process; or, if he/she is selected, the teacher may erroneously assume that he/she has well-developed knowledge and skills and wonder later why he/she isn't performing well.

Student c shows high levels of Aptitude and Knowledge and Skills but not Affect. This student has the tools but lacks some affective component, such as motivation. His/her program would have to consider the affective dimension as a priority. Whether it could be attacked directly or whether affect would change in a desirable direction as attention is given to the other dimensions might be determined as the student proceeds in the program.

Student d is high in Aptitude but low on both of the other two dimensions. The complex interaction between Knowledge and Skills and Affect may make it difficult to know where to begin. Should the student's program concentrate on developing the Knowledge and Skills he/she lacks, or would that frustrate the student? Would it be better to begin by providing for the affective characteristics by, for example, trying to increase motivation through activities that utilize the student's strengths?

Examples in Different Areas of Endeavor

The three dimensions have implications for the different subject areas. Table 1 shows possible traits for each dimension in different subject areas.

Insert Table 1 about here

Most of these areas represent somewhat discrete areas of performance. The area of leadership, however, represents what could be termed "conglomerate giftedness," since it is not a

Table 1

Traits Associated with the Three Dimensions in Different Areas of Endeavor

	Aptitudes	Knowledge and Skills	Affective Characteristics
Writing	Verbal Metaphorical Verbal fluency	Grammar Punctuation Spelling	Motivation Flexibility of thinking Inquiringness
Music	Pitch discrimination Manual dexterity	Scales (knowing and playing) Chords Rhythm	Expressiveness Appreciation
Visual Arts	Sense of space, color	Knowledge of color Manual dexterity	Expressiveness Willingness to experiment
Mathematics	Quantitative relationships	Arithmetic operations	Liking for solving problems
Leadership	Human relationships	Communication skills	Desire to influence others

specific "subject area" but utilizes a number of kinds of characteristics.

Some characteristics may overlap several of these fields. For example, general intelligence appears to be a kind of aptitude that is important in each area. Motivation is an affective trait that is probably important in each of the areas.

In developing a program for a gifted student, the teacher would first look for one or more measures or indicators of characteristics associated with each dimension. He/she would then assess the student's level of functioning on the different measures or indicators in order to determine where the student stood on each of the three dimensions. The assessments may be objectively obtained through testing or subjectively determined through judgments of behavior or products. Whatever the form of assessment, students are not likely to fall as neatly at the four corners of the cube as was the case with the examples given above. However, data on a student may show relatively high standing on one dimension when compared to one or both of the other dimensions, thus providing the teacher with a starting point for developing an educational program for the student.

Conclusion

The three-dimensional model conceives of giftedness as a combination of characteristics. Placing different types of characteristics in three dimensions emphasizes the different qualities of the characteristics as well as the fact that such characteristics exist in degrees or levels, thus helping us avoid

thinking of giftedness or its components as being either wholly present or wholly absent in any individual.

The model recognizes the needs of students who are high in some characteristic related to giftedness but not in others, instead of insisting that "true giftedness" means possessing a particular array of characteristics at some high level. The model acknowledges that gifted students may be deficient in some areas. Rather than leaving them out of a program, it includes them and addresses their deficiencies. In this way, it may help us identify gifted students who have been overlooked by our traditional methods of identifying the gifted.

Finally, with knowledge about a student's characteristics on the three dimensions, we can go beyond differentiating curricula for gifted students in general to individualizing curricula for a particular student.